ABSTRACT

The invention features a method for determining non-linear cyclic errors in a metrology system that positions a measurement object under servo-control based on an interferometrically derived position signal. The method includes: translating the measurement object under servo-control at a fixed speed; identifying frequencies of any oscillations in the position of measurement object as it is translated at the fixed speed; and determining amplitude and phase coefficients for sinusoidal components at the identified frequencies which when combined with the position signal suppress the oscillations. The invention also features a method for positioning a measurement object under servo-control based on an interferometrically derived position signal indicative of a position for the measurement object. This method includes: generating a compensated position signal based on the interferometrically derived position signal and at least one correction term that has a sinusoidal dependence on the position of the measurement object; and repositioning the measurement object based on the compensated position signal and a desired position for the measurement object.